

# (12) UK Patent Application (19) GB (11) 2 267 021 (13) A

(43) Date of A publication 24.11.1993

(21) Application No 9310158.2

(22) Date of filing 18.05.1993

(30) Priority data

(31) 9210681

(32) 19.05.1992

(33) GB

(71) Applicant  
Molins plc

(Incorporated in the United Kingdom)

11 Tanners Drive, Blakelands, Milton Keynes, Bucks,  
MK14 5LU, United Kingdom

(72) Inventor  
Peter Alec Clarke

(74) Agent and/or Address for Service

J C Webb  
Molins plc, Group Patent Department, Haw Lane,  
Saunderton, High Wycombe, Bucks, HP14 4JE,  
United Kingdom

(51) INT CL<sup>6</sup>  
A24D 3/02

(52) UK CL (Edition L)  
A2C CGMB

(56) Documents cited  
GB 1179683 A

(58) Field of search  
UK CL (Edition L) A2C CGJA CGMB  
INT CL<sup>6</sup> A24D 3/02

(54) Filter cigarette machine

(57) Filter cigarettes with composite mouthpieces are produced by separately delivering different filter sections (B, W) to positions adjacent the ends of tobacco sections and wrapping and sealing them together to form a filter cigarette while they are moving in directions transverse to their lengths. The production process can be carried out on a modified plug assembler, thereby removing the need for any separate composite plug maker.

Fig. 2.

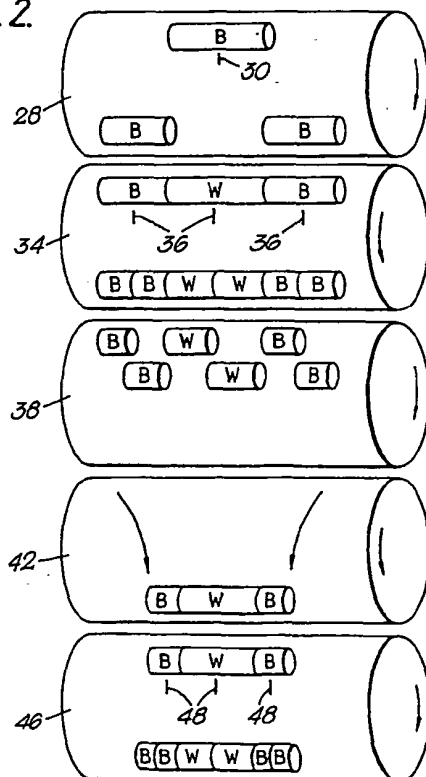


Fig. 3.

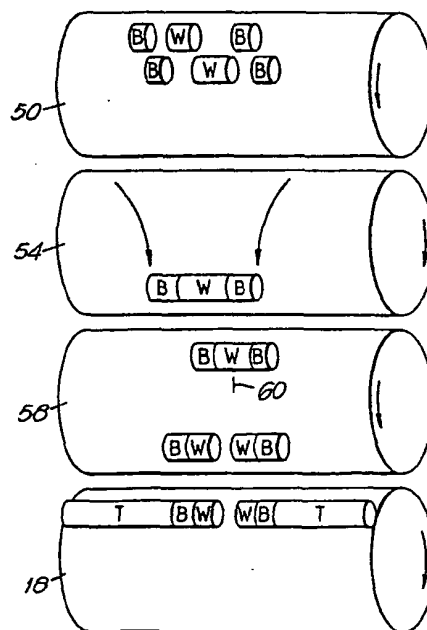


Fig.1.

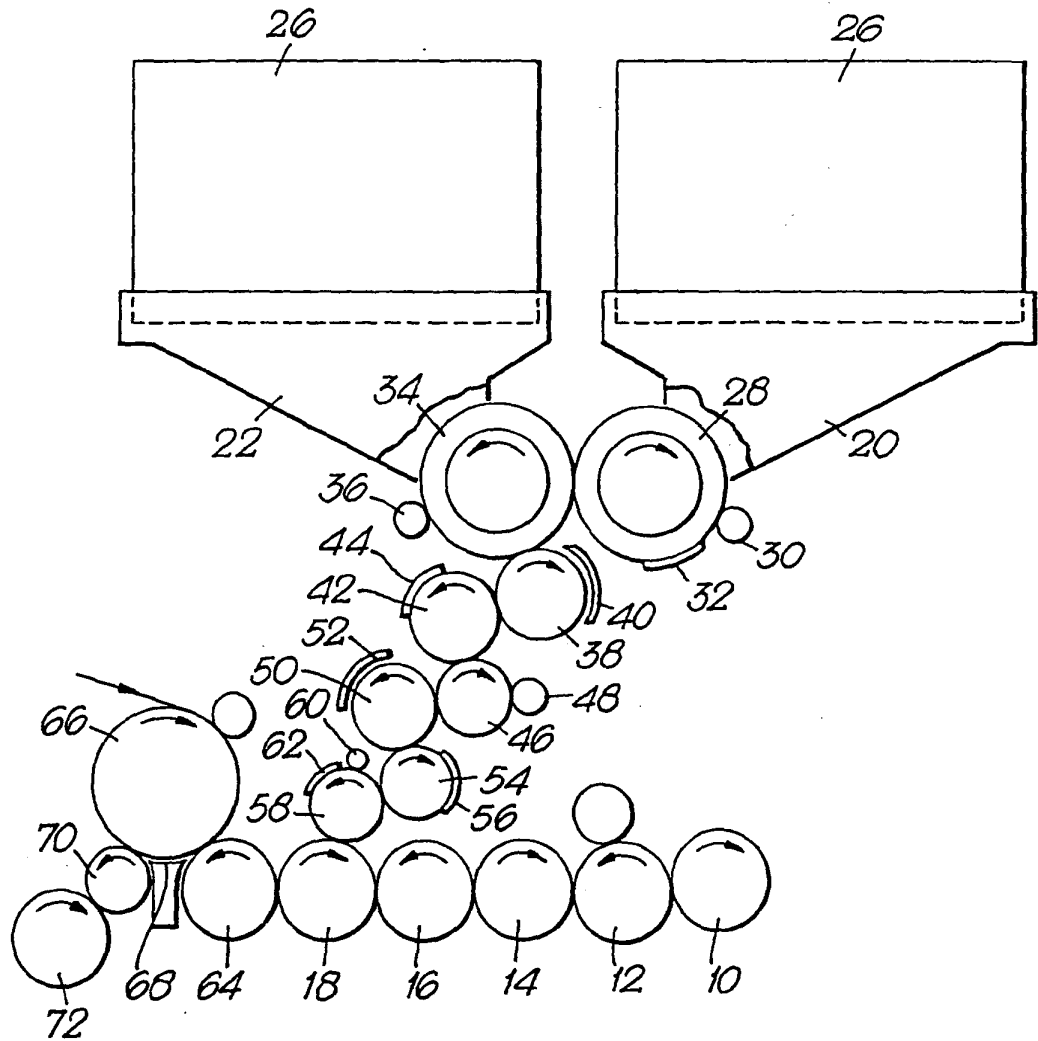


Fig. 2.

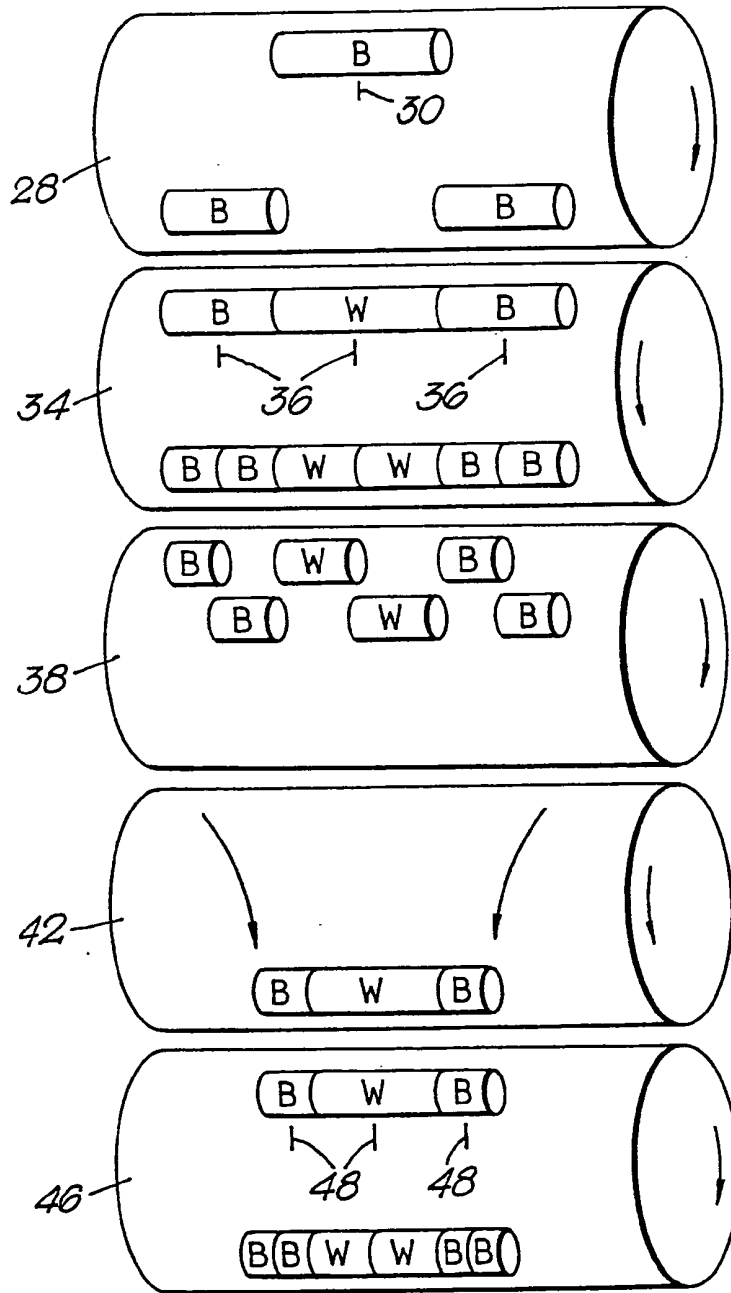
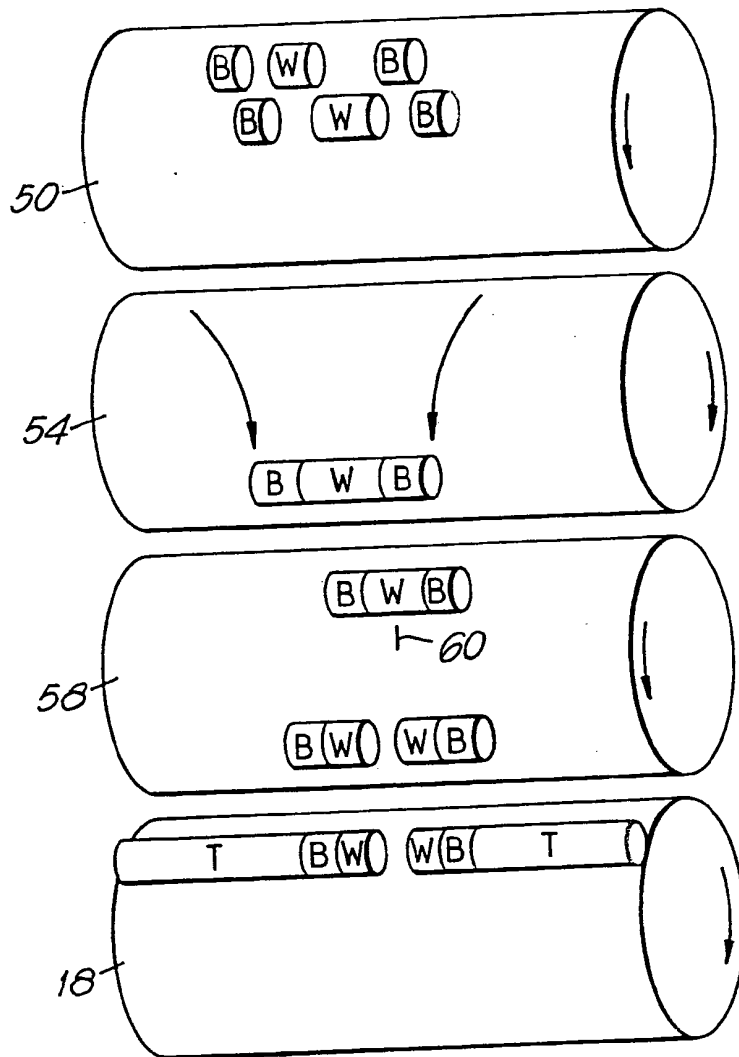


Fig. 3.



1     Filter Cigarette Manufacture

2  
3             This invention relates to manufacture of filter cigarettes and in  
4     particular to manufacture of such cigarettes having composite  
5     mouthpieces.

6             As used herein the term "composite mouthpiece" includes any  
7     mouthpiece having at least two different rod-like sections. For  
8     convenience, reference hereinafter will be made to "filter sections" but it  
9     should be understood that the sections need not have any  
10    demonstrable filtering effect, e.g. they could be open tubes. Similarly,  
11    each filter cigarette will be referred to as including a tobacco section  
12    and filter portion. Thus the filter portions with which the present  
13    invention is concerned comprise at least two filter sections. Unless the  
14    context necessarily requires otherwise reference herein to a filter  
15    cigarette, tobacco section, filter portion or filter section should be  
16    interpreted as including a reference to such cigarette, section or portion  
17    having a length which is either equal to or a multiple of that occurring in  
18    an individual filter cigarette.

19            It is known to produce composite mouthpieces by assembling  
20    component filter sections in a predetermined order in axial alignment  
21    and wrapping and sealing the assembly in a uniting band. Usually the  
22    assemblies so produced are of multiple length, e.g. four or six times the  
23    length of an individual filter portion. In one known form of machine for  
24    producing composite filter rod the component filter sections are  
25    assembled on a series of drums while moving in a direction transverse  
26    to their lengths prior to being wrapped and sealed while moving in an  
27    axial direction. In another known form of machine the component filter  
28    sections are assembled and wrapped and sealed while moving in an  
29    axial direction. In both cases multiple length component filter rods are  
30    subsequently transported to filter cigarette assembling machines for  
31    joining to tobacco sections to form filter cigarettes.

32            According to the present invention a cigarette assembling  
33    machine adapted to assemble filter cigarettes having composite  
34    mouthpieces comprises means for delivering tobacco sections in a  
35    direction transverse to their lengths, means for assembling first and  
36    second filter sections in alignment with each tobacco section, and  
37    means for wrapping and sealing said sections while they are moving  
38    transverse to their lengths to produce a filter cigarette.

1           The machine preferably includes separate sources of multiple  
2 length first and second filter sections and means for severing and  
3 realigning said filter sections prior to bringing them into alignment with  
4 the tobacco section. Preferably the machine includes at least one  
5 conveyor on which an axially aligned assembly comprising axially-  
6 spaced tobacco sections and interposed first and second filter sections  
7 is conveyed in a direction transverse to its length. Preferably said  
8 assembly comprises first filter sections immediately adjacent the inner  
9 ends of the tobacco sections and a double length filter section (or two  
10 single length filter sections) between the first filter sections.

11           The machine preferably includes a catcher drum or the like for  
12 receiving the tobacco sections and may include a conventional cork  
13 drum and rolling plate and conventional delivery system. Thus the  
14 apparatus may comprise a conventional filter cigarette assembling  
15 machine modified so as to assemble composite filter portions from  
16 separate sources of the component filter sections.

17           As compared with conventional apparatus for producing filter  
18 cigarettes having composite mouthpieces, in which a filter cigarette  
19 assembling machine is fed with composite filter rod produced on a  
20 separate composite rod making machine, the present apparatus has  
21 several advantages. There is no requirement for such a separate  
22 composite rod maker, nor for tray or other handling equipment for  
23 transporting the composite mouthpiece rod to a filter cigarette  
24 assembling machine. There are consequent potential savings in labour,  
25 floor space (including storage space for composite mouthpiece rods),  
26 and power consumption. Moreover there is a materials saving in that  
27 the filter cigarette has only a single wrapper (the uniting band)  
28 surrounding the filter sections: the need for a separate wrapper joining  
29 the filter sections together is eliminated.

30           The invention will be further described, by way of example only,  
31 with reference to the accompanying diagrammatic drawings, in which:

32           Figure 1 is a side elevation of a filter cigarette assembling  
33 machine,

34           Figure 2 is a developed view of certain conveying drums of the  
35 machine of Figure 1, showing the positions of filter sections on the  
36 drums, and

37           Figure 3 is a view, similar to Figure 2, showing the positions of  
38 filter sections on further conveying drums of the machine of Figure 1.

1           The machine shown in Figure 1 is arranged to produce a filter  
2 cigarette having a tobacco section attached to a filter portion, the filter  
3 portion comprising two adjacent sections of different filter materials.  
4 The machine receives successive tobacco sections from a continuous  
5 rod cigarette making machine on a catcher drum in a conventional  
6 manner; and also joins the filter portion to each tobacco section in a  
7 conventional manner, by rolling a uniting band around the filter portion  
8 and adjacent end of the tobacco section. The manner in which this is  
9 achieved is, for example, in the Molins PA10N filter cigarette assembling  
10 machine. The machine shown in Figure 1 differs from conventional  
11 machines in that each filter portion comprises two different filter sections  
12 assembled on the machine.

13           In the machine of Figure 1 double length tobacco sections are  
14 received from the making machine (not shown) on a fluted catcher drum  
15 10 and are subsequently severed at their mid-points and axially  
16 separated on a series of further drums 12-16. A series of axially  
17 separated single length tobacco sections is thus transferred to a drum  
18 18, downstream of the drum 16. The passage of the tobacco sections  
19 between the drums 10 and 18 is substantially identical to that in said  
20 Molins PA10N machine.

21           The drum 18 receives filter portions in axial alignment with each  
22 tobacco section, as described below. Each filter portion comprises first  
23 and second filter sections of different materials. Each filter section is  
24 derived from a multiple length filter section delivered to the machine and  
25 subsequently cut into individual sections. For convenience the different  
26 filter sections will be hereinafter referred to as black sections and white  
27 sections; the terms "black" and "white" have no reference to the colours  
28 of the sections.

29           The machine has separate hoppers 20, 22 for the black and white  
30 filter sections respectively. The sections received in each hopper 20, 22  
31 are each eight times the length of an individual section contained in  
32 each filter portion. Each of the hoppers 20, 22 is adapted to receive  
33 filter sections from a respective tray 24, 26 placed above the hopper.

34           Referring also to Figure 2, the black sections B are removed from  
35 the hopper 20 by a fluted drum 28. While being conveyed by the drum  
36 28, they are cut at their mid-points by a knife 30 and then ploughed  
37 axially apart by guides 32. The drum 28 transfers the axially-spaced  
38 black sections B to a drum 34 which also serves to remove the white

1 sections W from the hopper 22, the white sections being received  
2 between the axially spaced black sections. While being conveyed by  
3 the drum 34, each black and white section is severed at its mid-point by  
4 a knife 36 (i.e. there are three such knives). The resultant assembly of  
5 six sections is transferred to a drum 38 having a rolling plate 40 which  
6 causes the first, third and fifth sections to be rolled back as indicated in  
7 Figure 2 so as to produce separate assemblages each having three  
8 similar components (black, white, black). These assemblages are  
9 transferred from the drum 38 to a drum 42 on which they are ploughed  
10 together and into axial alignment by guides 44. The aligned sections  
11 are transferred from the drum 42 to a drum 46 which cooperates with  
12 knives 48 to sever each of the sections again at its mid-point.

13 Referring now also to Figure 3, the assemblages of six  
14 component sections produced on the drum 46 are transferred to a drum  
15 50 having a rolling plate 52 which causes the first, third and fifth  
16 component sections to be rolled back, in a manner similar to that which  
17 occurs on the drum 38, so as to produce two assemblages each of  
18 three similar components. These assemblages are transferred from the  
19 drum 50 to a drum 54 on which they are ploughed together and into  
20 axial alignment by guides 56. From the drum 54 the assemblages are  
21 transferred to a drum 58 on which the central white section W is severed  
22 at its mid-point by a knife 60. This produces an assemblage of four  
23 sections (black, white, white, black) each of individual length. A guide  
24 62 causes the assemblage to be separated at its mid-point so as to  
25 produce two pairs of sections each of which comprises the components  
26 required for a filter portion (i.e. a black section and a white section). The  
27 pairs of sections are transferred from the drum 58 to the drum 18 in  
28 alignment with tobacco sections T, as shown in Figure 3.

29 From the drum 18 the tobacco and filter assemblies are  
30 transferred via an alignment drum 64, to a cork drum 66 and rolling plate  
31 68, at which a uniting band is wrapped and sealed around each tobacco  
32 section and filter portion to produce individual filter cigarettes.

33 Downstream of the cork drum 68 the cigarettes are delivered by  
34 way of drums 70,72 and further drums (not shown) which form no part  
35 of this invention.

36 In an alternative arrangement the cutting and separating  
37 operation provided on the drum 58 is omitted and a double length  
38 cigarette is produced at the cork drum 66 and rolling plate 68 (using a



1 double width uniting band), the double length cigarette being  
2 subsequently severed to yield individual length filter cigarettes on one of  
3 the drums upstream of the final transfer drum 70.

4 Further details of apparatus for cutting and realigning filter  
5 sections while conveying them in fluted drums, including rolling back  
6 filter sections and subsequently shifting them axially, are contained in  
7 British patent specification No. 1179683, to which reference is directed  
8 for details.

9 Where there is a requirement to move sections axially or close  
10 them up or align them the movement may be achieved by mechanical  
11 displacement means or pneumatically or by a combination of both. One  
12 advantageous way of shifting sections (or assemblages), which avoids  
13 contacting their ends with mechanical means or exposing them to high  
14 pressure air, is to use suction. Thus, a stop against which it is required  
15 to move one end of a section (or assemblage) may have associated  
16 suction means for drawing that end towards that stop.

1       Claims

2  
3           1.     A filter cigarette assembling machine adapted to assemble  
4 filter cigarettes having composite mouthpieces, comprising means for  
5 delivering tobacco sections in a direction transverse to their lengths,  
6 means for assembling first and second filter sections in alignment with  
7 each tobacco section, and means for wrapping and sealing said  
8 sections while they are moving transverse to their lengths to produce a  
9 filter cigarette.

10  
11           2.     A filter cigarette assembling machine, substantially as  
12 herein described with particular reference to the accompanying  
13 drawings.

-7-

**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number

GB 9310158.2

**Relevant Technical fields**

(i) UK CI (Edition L ) A2C CGMB CGJA

(ii) Int CI (Edition 5 ) A24D 3/02

**Databases (see over)**

(i) UK Patent Office

(ii)

Search Examiner

M ELLIOTT

Date of Search

5 AUGUST 1993

Documents considered relevant following a search in respect of claims 1-2

| Category<br>(see over) | Identity of document and relevant passages | Relevant to<br>claim(s) |
|------------------------|--|-------------------------|
| X                      | GB 1179683 (LONDON MOLINS MACHINE CO)      | 1                       |

| Category | Identity of document and relevant passages | Relevant to claim(s) |
|----------|--|----------------------|
|          |  |                      |

**Categories of documents**

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

**Databases:** The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).